

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		10810756	
	Filing Date		2004-03-26	
	First Named Inventor	Hu		
	Art Unit	2166		
	Examiner Name	Ahluwalia, Navneet		
Attorney Docket Number		oracle01.028		

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/NKA/	1	6282540	B1	2001-10-28	Goldensher, et al.	See the attached IPRP

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T⁵

**INFORMATION DISCLOSURE
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EXAMINER SIGNATURE

Examiner Signature	/Navneet K Ahluwalia/	Date Considered	12/05/2008
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*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. ² Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). ³ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁴ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁵ Applicant is to place a check mark here if English language translation is attached.

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CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

- ☒ See attached certification statement.
- ☐ Fee set forth in 37 CFR 1.17 (p) has been submitted herewith.
- ☐ None

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Gordon E. Nelson/	Date (YYYY-MM-DD)	2008-12-04
Name/Print	Gordon E. Nelson	Registration Number	30,093

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

PATENT
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
(oracle01.028)

Applicant: HU, et al.

Confirmation No: 9081

Application No: 10/810,756

Group Art Unit: 2166

Filed: 3/26/2004

Examiner: Ahluwalia, Navneet

Title: *A database management system with persistent, user-accessible bitmap values*

Commissioner for Patents
Alexandria, VA 22313-1450

**Relevance of the References in the Information Disclosure Statement
and Certification under 37 C.F.R. 1.97(e)(2)**

The references listed in the Information Disclosure Statement were cited in PCT/US05/09052, Hu, et al., *Database management system with persistent, user-accessible bitmap values*, filed 17 March 2005, which claims priority from the above application. The reference in the Information Disclosure Statement was cited in an *International Preliminary Report on Patentability* which issued in the PCT application on 9 September 2008. The other reference cited in the *International Preliminary Report*, Depledge, U.S. 5,884,307, is already of record in the prosecution of the above application. A copy of the *International Preliminary Report* is attached.

Applicants' attorney hereby certifies that no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in §156 (c) more than three months prior to the filing of the information disclosure statement.

Respectfully submitted,

/Gordon E. Nelson/
Attorney of record,
Gordon E. Nelson
57 Central St., P.O. Box 782
Rowley, MA, 01969,
Registration number 30,093
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December 1, 2008
Date

PATENT COOPERATION TREATY

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:
GORDON E. NELSON
57 CENTRAL ST., P.O. BOX 782
ROWLEY, MA 01969

PCT

NOTIFICATION OF TRANSMITTAL OF
INTERNATIONAL PRELIMINARY
REPORT ON PATENTABILITY
(Chapter II of the Patent Cooperation Treaty)

(PCT Rule 71.1)

Date of mailing
(day/month/year)

09 SEP 2008

Applicant's or agent's file reference

IMPORTANT NOTIFICATION

ORACLE P01042

International application No.

International filing date (day/month/year)

Priority date (day/month/year)

PCT/US05/09052

17 March 2005 (17.03.2005)

26 March 2004 (26.03.2004)

Applicant

ORACLE INTERNATIONAL CORPORATION

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary report on patentability and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communications to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.
4. **REMINDER**

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)); see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary report on patentability. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Office, see Volume II of the PCT Applicant's Guide.

The applicant's attention is drawn to Article 33(5), which provides that the criteria of novelty, inventive step and industrial applicability described in Article 33(2) to (4) merely serve the purposes of international preliminary examination and that "any Contracting State may apply additional or different criteria for the purposes of deciding whether, in that State, the claimed invention is patentable or not" (see also Article 27(5)). Such additional criteria may relate, for example, to exemptions from patentability, requirements for enabling disclosure, clarity and support for the claims.

Name and mailing address of the IP/EA/ US

Mail Stop PCT, Attn: IP/EA/US

Communication for Patents

P.O. Box 3359

Albuquerque, New Mexico 87103-0359

Facsimile No. (505) 271-3291

Authorized officer

Adam E. Hinkley

Telephone No. 571-275-8750

Form PCT/IB/301 (January 2004)

PATENT COOPERATION TREATY

From the
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ROWLEY, MA 01969

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(Chapter II of the Patent Cooperation Treaty)

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Date of mailing
(day/month/year)

09 SEP 2008

Applicant's or agent's file reference

ORACLE/001/062

IMPORTANT NOTIFICATION

International application No.

International filing date (day/month/year)

Priority date (day/month/year)

PCT/US05/0082

17 March 2005 (17.03.2005)

26 March 2004 (26.03.2004)

Applicant

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1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary report on patentability and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communications to all the elected Offices.
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Alan T. Humein

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Publication No. (571) 273-3201

Form PCT/IB/EA/116 (January 2004)

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference: ORACLE 101 043		FOR FURTHER ACTION See Form PCT/ISA/216	
International application No. PCT/US95/00652		International filing date (day/month/year) 17 March 2003 (17.03.2003)	Priority date (day/month/year) 26 March 2004 (26.03.2004)
International Patent Classification (IPC) or national classification and IPC IPC: G06F 17/30 (2006.01); G06F 9/44 (2006.01) USPC: 707/2.9-717/06			
Applicant ORACLE INTERNATIONAL CORPORATION			
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>92</u> sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input type="checkbox"/> (sent to the applicant and to the International Bureau) a total of _____ sheets, as follows:</p> <p><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p> <p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the report</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input checked="" type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>			
Date of submission of the demand 03 October 2005 (03.10.2005)		Date of completion of this report 29 June 2008 (29.06.2008)	
Name and mailing address, of the IP/EA/IS Mail Stop PCT, Attn: IP/EA/IS Commissioner for Patents P.O. Box 1430 Alexandria, Virginia 22313-1430		Authorized officer Adam L. Hodula	
Facsimile No. (571) 273-3261		Telephone No. (571) 273-8300	

Box No. 1 Basis of the report

1. With regard to the language, this report is based on:

- ☒ the international application in the language in which it was filed.
- ☐ a translation of the international application into English, which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3(a) and 23.1(b))
- ☐ publication of the international application (under Rule 12.4(a))
- ☐ international preliminary examination (under Rules 35.2(a) and/or 53.3(a))

2. With regard to the elements of the international application, this report is based on *(replace elements which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

- ☒ the international application as originally filed/furnished
- ☒ the description:
- pages 1-34 as originally filed/furnished
- pages* NONE received by this Authority on _____
- pages* NONE received by this Authority on _____
- ☒ the claims:
- pages 35-41 as originally filed/furnished
- pages* NONE as amended (together with any statement) under Article 19
- pages* NONE received by this Authority on _____
- pages* NONE received by this Authority on _____
- ☒ the drawings:
- pages 1, 19, 10, 10 as originally filed/furnished
- pages* NONE received by this Authority on _____
- pages* NONE received by this Authority on _____
- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to the sequence listing (*specify*): _____

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)):

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to the sequence listing (*specify*): _____

5. ☐ This report has been established taking into account the rectification of an obvious mistake authorized by or notified to this Authority under Rule 91 (Rule 70.2(c)).

* If item 5 applies, some or all of these sheets may be marked "superseded".

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/US05/06052

Box No. IV Lack of unity of invention

1. ☐ In response to the invitation to restrict or pay additional fees the applicant has, within the applicable time limit:
- ☐ restricted the claims.
 - ☐ paid additional fees
 - ☐ paid additional fees under protest, and, where applicable, the protest fee
 - ☐ paid additional fees under protest but the applicable protest fee was not paid
 - ☐ neither restricted the claims nor paid additional fees
2. ☒ This Authority found that the requirement of unity of invention is not complied with and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.
3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is:
- ☐ complied with.
 - ☒ not complied with for the following reasons:

1-47, 48-55, 56-57

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

I. Claims 1 - 47 are drawn to user accessible operations on bitmap values, classified in class 707, subclass 9.

II. Claims 48 - 55 are drawn to electronic product codes in a digital system and their transfer, classified in class 717, subclass 106

III. Claims 56 - 57 are drawn towards data indexing and identifying of attributes, classified in class 707, subclass 7.

4. Consequently, this report has been established in respect of the following parts of the international application:

- ☒ all parts
- ☐ the parts relating to claim Nos. _____

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PC/13/US65699052

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims <u>NONE</u>	YES
	Claims <u>1-57</u>	NO
Inventive Step (IS)	Claims <u>NONE</u>	YES
	Claims <u>1-57</u>	NO
Industrial Applicability (IA)	Claims <u>1-57</u>	YES
	Claims <u>NONE</u>	NO

2. Citations and Explanations (Rule 70.7)
Please See Continuation Sheet

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of:

VI. 3. Citations and Explanations:

Claims 1 - 57 lack novelty under PCT Article 33(2) as being anticipated by Goldenshter et al. ("Goldenshter" herein after) (US 6,282,540 B1) further in view of Depledge et al. ("Depledge" herein after) (US 5,884,397).

Claim 1 - 57 lack an inventive step under PCT Article 33(3) as being obvious over Goldenshter et al. ("Goldenshter" herein after) (US 6,282,540 B1) in view of Depledge et al. ("Depledge" herein after) (US 5,884,397).

With respect to claim 1:

Goldenshter discloses a database management system having the improvement comprising: bitmap values, a bitmap value having a representation of a bitstring where in set bits specify a set of objects whose definitions are built into the database management system, and non-accessible operations on the bitmap values (column 4 lines 1 - 49 and lines 62 - 67 and column 5 lines 32 - 57 Goldenshter).

Goldenshter however does not disclose the representation of a bitstring explicitly as claimed.

Depledge teaches the bitmap value having a representation of a string of bits (Figure 4 and column 6 lines 21 - 38, Depledge). It would have been obvious to one of ordinary skill in the art of data processing at the time of the present invention to combine the teachings of cited references because both the references are directed in the same field of invention, bitmapped indexing. Furthermore, the updating of the bitmapped indexes in Depledge would improve on the query performance with the use of the data table (column 5 lines 8 - 31, Depledge).

Claim 2 - 23 are objected under the same rationale given for claim 1. The citation of the elements claimed and taught are listed below with respect to claim 2.

Goldenshter as modified discloses the database management system as taught in claim 1 wherein the user-accessible operations

Supplemental lines

comprise at least a set-to-bitmap operation wherein a bitmap value is derived from a given set of the objects (column 4 lines 1 - 49 and lines 62 - 67 and column 5 lines 32 - 37, Goldenshteyn).

With respect to claim 2,

Goldenshteyn as modified discloses the database management system set forth in claim 2 wherein the derived bitmap value is a new bitmap value that specifies the objects in the given set (column 4 lines 1 - 49 and lines 62 - 67 and column 5 lines 32 - 37, Goldenshteyn).

With respect to claim 4,

Goldenshteyn as modified discloses the database management system set forth in claim 2 wherein the derived bitmap value is a preexisting bitmap value which now further specifies the objects in the given set (column 4 lines 62 - 67 and column 5 lines 32 - 37, Goldenshteyn).

With respect to claim 5,

Goldenshteyn as modified discloses the database management system set forth in claim 3 wherein the derived bitmap value is a preexisting bitmap value which now no longer specifies any objects in the given set (column 4 lines 62 - 67 and column 5 lines 32 - 37, Goldenshteyn).

With respect to claim 6,

Goldenshteyn as modified discloses the database management system set forth in claim 1 wherein the user-accessible operations comprise at least a bitmap-to-set operation wherein the set of the objects specified in a given bitmap value is derived from the given bitmap value (column 4 lines 62 - 67 and column 5 lines 32 - 37, Goldenshteyn).

With respect to claim 7,

Goldenshteyn as modified discloses the database management system set forth in claim 1 wherein the user-accessible operations comprise at least a bitmap-to-count operation wherein a value representing the number of the objects in the set specified in a given bitmap value is derived from the given bitmap value (column 5 lines 17 - 44, Depledge).

With respect to claim 8,

Goldenshteyn as modified discloses the database management system set forth in claim 1 wherein the user-accessible operations comprise at least a logical operation wherein a value representing the logical value TRUE is returned when a given object belongs to the set of the objects represented by a given bitmap value (column 4 lines 62 - 67 and column 5 lines 32 - 37, Goldenshteyn).

With respect to claim 9,

Goldenshteyn as modified discloses the database management system set forth in claim 1 wherein the user-accessible operations comprise at least a logical operation on a first bitstring represented by a first bitmap value and a second bitstring represented by a second bitmap value (column 4 lines 62 - 67 and column 5 lines 32 - 37, Goldenshteyn).

With respect to claim 10,

Goldenshteyn as modified discloses the database management system set forth in claim 1 wherein the user-accessible operations comprise at least a comparison operation on a first bitmap value and a second bitmap value wherein a value representing the logical value TRUE is returned when the first bitmap value and the second bitmap value specify the same set of the objects (column 6 lines 54 - 67, Depledge).

With respect to claim 11,

Goldenshteyn as modified discloses the database management system set forth in claim 1 wherein the bitmap values include mutable bitmap values; and the user-accessible operations comprise at least an assignment operation which sets a target mutable bitmap value from a source bitmap value (column 5 lines 32 - 37, Goldenshteyn).

With respect to claim 12,

Goldenshteyn as modified discloses the database management system set forth in claim 1 wherein the bitmap values include bitmap values that are persistent in the database management system (column 5 lines 32 - 37, Goldenshteyn).

With respect to claim 13,

Goldenshteyn as modified discloses the database management system set forth in claim 12 wherein the persistent bitmap values include bitmap values in fields of tables of the database management system (column 5 lines 32 - 37, Goldenshteyn).

With respect to claim 14,

Goldenshteyn as modified discloses the database management system set forth in claim 1 wherein the histogram is compressed (column 7 lines 48 - 62, Depledge).

With respect to claim 15,

Goldenshteyn as modified discloses the database management system set forth in claim 1 wherein the objects are identifiers for

Supplemental Box

other objects that exist in the database management system (column 8 lines 1 - 11, Depledge).

With respect to claim 16,

Goldensher as modified discloses the database management system set forth in claim 15 wherein the identifiers for the other objects are row identifiers of rows in the database management system (column 8 lines 1 - 11, Depledge).

With respect to claim 17,

Goldensher as modified discloses the database management system set forth in claim 16 wherein the row identifiers are row identifiers returned by a user-defined query executed in the database management system (column 8 lines 1 - 11, Depledge).

With respect to claim 18,

Goldensher as modified discloses the database management system set forth in claim 17 wherein the query returns a row identifier when a field in the row has an attribute specified in the query, whereby the bitmap value represents the set of fields having the specified attribute (column 11 lines 24 - 37, Depledge).

With respect to claim 19,

Goldensher as modified discloses the database management system set forth in claim 1 wherein the objects are identifiers for other objects that exist outside the database management system (column 8 lines 1 - 11, Depledge).

With respect to claim 20,

Goldensher as modified discloses the database management system set forth in claim 19 wherein the identifiers for objects that exist outside the database management system are electronic product codes for product items (Figures 3 - 6, Depledge).

With respect to claim 21,

Goldensher discloses a data storage device, the data storage device being characterized in that the data storage device contains code which, when executed in a computer system, implements the database management system set forth in claim 1 (similar rejection as for claim 1).

With respect to claim 22,

Goldensher discloses a bitmap value employed in a database management system, the bitmap value representing a first set of first objects, the first objects being external to the database management system and members of the first set being mapped onto a members of a second set of second objects that is defined in the database management system (column 4 lines 1 - 49 and lines 62 - 67 and column 5 lines 32 - 57, Goldensher), and the bitmap value comprising: a mapping specifier that maps a string of bits to a subset of the second set (column 4 lines 1 - 49 and lines 62 - 67 and column 5 lines 32 - 57, Goldensher); and a representation of the string of bits wherein a bit is set in the represented string of bits when the member of the second set that is mapped to the bit has a member of the first set mapped therein (column 3 lines 1 - 49 and lines 62 - 67 and column 5 lines 32 - 57, Goldensher).

Goldensher however does not disclose the representation of a string of bits explicitly as claimed.

Depledge teaches the bitmap value having a representation of a string of bits (Figure 4 and column 6 lines 21 - 38, Depledge) (it would have been obvious to one of ordinary skill in the art of data processing at the time of the present invention to combine the teachings of cited references because both the references are directed in the same field of invention, bitmapped indexing. Furthermore, the updating of the bitmapped indexes in Depledge would improve on the query performance with the use of the data tables (column 3 lines 8 - 31, Depledge)).

Claims 23 - 35 are objected under the same rationale given for claim 22. The citations of the elements claimed and taught are listed below.

With respect to claim 23,

Goldensher as modified discloses the bitmap value set forth in claim 22 wherein the second set is ordered (column 4 lines 1 - 49 and lines 62 - 67 and column 5 lines 32 - 57, Goldensher).

With respect to claim 24,

Goldensher as modified discloses the bitmap value set forth in claim 23 wherein the order of the members of the second ordered set corresponds to values of the members thereof; the mapping specifier specifies the mapping by specifying one or more ranges of the values of the members of the second ordered set to which the string of bits is mapped; and the representation of the string of bits represents strings of bits corresponding to the ranges (column 4 lines 1 - 49 and lines 62 - 67 and column 5 lines 32 - 57, Goldensher).

With respect to claim 25,

Goldensher as modified discloses the bitmap value set forth in claim 24 wherein the mapping specifier specifies the range of the values by specifying a start value and an end value (4 lines 1 - 49 and lines 62 - 67 and column 5 lines 32 - 57, Goldensher).

With respect to claim 26,

Goldensher as modified discloses the bitmap value set forth in claim 24 wherein the values include a prefix which determines a range of the values; and the mapping specifier specifies the range of the values by specifying the prefix for the range (column 4 lines 1

Supplemental Box

— 49 and lines 62 – 67 and column 5 lines 32 – 57, Goldenshteyn)

With respect to claim 27,

Goldenshteyn as modified discloses the bitmap value set forth in claim 26 wherein the mapping specifier further specifies the range of the values by using a start value and an end value to specify one or more subranges of the range specified by the prefix (column 4 lines 1 – 49 and lines 62 – 67 and column 5 lines 32 – 57, Goldenshteyn).

With respect to claim 28,

Goldenshteyn as modified discloses the bitmap value set forth in claim 24 wherein the objects in the second ordered set are identifiers for objects in the first set (column 5 lines 17 – 44, Depledge).

With respect to claim 29,

Goldenshteyn as modified discloses the bitmap value set forth in claim 28 wherein the identifiers for objects in the first set are electronic product codes for the objects items (Figures 3 – 6, Depledge).

With respect to claim 30,

The bitmap value set forth in claim 22 wherein there is a plurality of the bitmap values in the database management system; and certain of the bitmap values are persistent in the database management system (column 8 lines 1 – 11, Depledge).

With respect to claim 31,

Goldenshteyn as modified discloses the bitmap values set forth in claim 30 wherein the persistent bitmap values include bitmap values in fields of tables of the database management system (column 8 lines 1 – 11, Depledge).

With respect to claim 32,

Goldenshteyn as modified discloses the bitmap value set forth in claim 22 wherein the representation of the bitstring is a compressed representation thereof (column 7 lines 48 – 62, Depledge).

With respect to claim 33,

Goldenshteyn as modified discloses the bitmap value set forth in claim 22 wherein there is a plurality of the bitmap values in the database management system; and the database management system provides a plurality of user-accessible operations on the bitmap values (column 11 lines 24 – 32, Depledge).

With respect to claim 34,

Goldenshteyn as modified discloses the bitmap value set forth in claim 33 wherein certain of the user-accessible operations filter the range specifier and the representation of the bitstring as required to map the represented string of bits to a subset of the second set that is required for the operation (column 11 lines 24 – 37, Depledge).

With respect to claim 35,

Goldenshteyn discloses a data storage device, the data storage device being characterized in that the data storage device contains code which, when executed in a computer system, implements the bitmap value set forth in claim 22 (similar rejection as for claim 22).

With respect to claim 36,

Goldenshteyn discloses a method employed in a database system of making a bitmap value that represents a first set of objects external to the database system, the method comprising the steps performed in the database system of: mapping the objects onto a second ordered set of identifiers defined in the database management system (4 column 4 lines 1 – 47 and lines 62 – 67 and column 5 lines 32 – 57, Goldenshteyn); mapping a bitstring that is represented in the bitmap value onto a subset of the second set that includes the identifiers onto which the objects have been mapped (column 4 lines 1 – 49 and lines 62 – 67 and column 5 lines 32 – 57, Goldenshteyn); and setting the bits in the bitstring that correspond to the identifiers onto which the objects have been mapped (column 4 lines 1 – 49 and lines 62 – 67 and column 5 lines 32 – 57, Goldenshteyn).

Goldenshteyn however does not disclose the representation of a bitstring explicitly as claimed.

Depledge teaches the bitmap value having a representation of a string of bits (Figure 4 and column 6 lines 21 – 38, Depledge).

It would have been obvious to one of ordinary skill in the art of data processing at the time of the present invention to combine the teachings of cited references because both the references are directed in the same field of invention, bitmapped indexing. Furthermore, the updating of the bitmapped indices in Depledge would improve on the query performance with the use of the data tables (column 8 lines 8 – 31, Depledge).

Claims 17 – 43 are objected under the same rationale given for claim 36. The citations of the elements claimed and might be listed below.

With respect to claim 37,

Goldenshteyn as modified discloses the method set forth in claim 36 wherein in the step of mapping the objects, the identifiers in the second set are identical with identifiers that are employed externally to the database system to identify the objects (column 8 lines 1 – 11, Depledge).

Supplemental Box

With respect to claim 35,

Goldensher as modified discloses the method set forth in claim 37 wherein, in the second step, the identifiers are electronic product codes (Figures 3 - 6, Thopleidge).

With respect to claim 39,

Goldensher as modified discloses the method set forth in claim 36 wherein the step of mapping a bitstring comprises the steps of: making a range specifier that specifies a range of the ordered set of identifiers that includes the identifiers into which the objects have been mapped; and mapping the bits in the bitstring to the specified range (column 4 lines 1 - 49 and lines 62 - 67, Goldensher).

With respect to claim 40,

Goldensher as modified discloses the method set forth in claim 39 wherein the step of making a range specifier includes the step of: making a start value and an end value which together specify the range (column 5 lines 32 - 57, Goldensher).

With respect to claim 41,

Goldensher as modified discloses the method set forth in claim 39 wherein the step of making a range specifier includes the step of making a prefix value which specifies the range (column 5 lines 32 - 57, Goldensher).

With respect to claim 42,

Goldensher as modified discloses the method set forth in claim 36 further comprising the step of: compressing the bitstring (column 7 lines 48 - 62, Depledge).

With respect to claim 43,

Goldensher discloses a data storage device, the data storage device being characterized in that: the data storage device contains code which, when executed in a computer system, implements the method set forth in claim 36 (similar rejection as for claim 36).

With respect to claim 44,

Goldensher discloses a bitmap value employed in a database management system to represent a first subset of the row-identifiers defined in the database management system, the bitmap value comprising a mapping specifier that maps a string of bits to a second subset of the set of row identifiers (column 4 lines 1 - 49 and lines 62 - 67 and column 5 lines 32 - 57, Goldensher); and a representation of the string of bits wherein a bit is set in the represented string of bits when the member of the second subset that is mapped to the bit corresponds to a member of the first subset (column 4 lines 1 - 49 and lines 62 - 67 and column 5 lines 32 - 57, Goldensher); and the first subset is returned by a user-defined query executed by the database management system (column 4 lines 1 - 49 and lines 62 - 67 and column 5 lines 32 - 57, Goldensher).

Goldensher however does not disclose the representation of a bitstring explicitly as claimed.

Depledge teaches the bitmap value having a representation of a string of bits (Figure 4 and column 5 lines 21 - 32, Depledge).

It would have been obvious to one of ordinary skill in the art of data processing at the time of the present invention to combine the teachings of cited references because both the references are directed in the same field of invention bitmapped indexing. Furthermore, the updating of the bitmapped indexes in Depledge would improve on the query performance with the use of the data tables (column 1 lines 8 - 31, Depledge).

Claims 45 - 47 are objected under the same rationale given for claim 44. The citations of the elements claimed and taught are listed below.

With respect to claim 45,

Goldensher as modified discloses the bitmap value set forth in claim 44 wherein the database management system dynamically alters the mapping specifier and the representation of the string of bits as required to map the representation of the string of bits to a second subset of the row identifiers that includes the first subset of the row identifiers (column 4 lines 1 - 11, Depledge).

With respect to claim 46,

Goldensher as modified discloses the bitmap value set forth in claim 44 wherein the query returns a row identifier when a field in the row identified by the row identifier has an attribute specified in the query, whereby the bitmap value represents the set of fields whose values have the specified attribute (column 4 lines 1 - 49 and lines 62 - 67, Goldensher).

With respect to claim 47,

Goldensher discloses a data storage device, the data storage device being characterized in that: the data storage device contains code which, when executed in a computer system, implements the method set forth in claim 44 (similar rejection as for claim 44).

Claims 1 - 57 meet industrial applicability as defined by PCT Article 31(4).

***** END OF STATEMENT *****

US 2005/0064291 A1 (Day et al.) 17 March 2005 see paragraphs 9-10, 22, 43, 57

NOTES TO FORM PCT/ISA/220 (continued)

The letters must indicate the difference between the claims as filed and the claims as amended. It must, in particular, indicate, in connection with each claim appearing in the international application (it being understood that identical indications concerning several claims may be grouped), whether:

- (i) the claim is unchanged;
- (ii) the claim is cancelled;
- (iii) the claim is new;
- (iv) the claim replaces one or more claims as filed;
- (v) the claim is the result of the division of a claim as filed.

The following examples illustrate the manner in which amendments must be explained in the accompanying letter:

1. [Where originally there were 48 claims and after amendment of some claims there are 51]:
"Claims 1 to 29, 31, 32, 34, 35, 37 to 48 replaced by amended claims bearing the same numbers; claims 30, 33 and 36 unchanged; new claims 49 to 51 added."
2. [Where originally there were 15 claims and after amendment of all claims there are 11]:
"Claims 1 to 15 replaced by amended claims 1 to 11."
3. [Where originally there were 14 claims and the amendments consist in cancelling some claims and in adding new claims]:
"Claims 1 to 6 and 14 unchanged; claims 7 to 13 cancelled; new claims 15, 16 and 17 added." (or
"Claims 7 to 13 cancelled; new claims 15, 16 and 17 added; all other claims unchanged.")
4. [Where various kinds of amendments are made]:
"Claims 1-10 unchanged; claims 11 to 15, 18 and 19 cancelled; claims 14, 15 and 16 replaced by amended claim 14; claim 17 subdivided into amended claims 15, 16 and 17; new claims 20 and 21 added."

"Statement under Article 19(1)" (Rule 46.4)

The amendments may be accompanied by a statement explaining the amendments and indicating any impact that such amendments might have on the description and the drawings (which cannot be amended under Article 19(1)). The statement will be published with the international application and the amended claims.

It must be in the language in which the international application is to be published.

It must be brief, not exceeding 500 words if in English or if translated into English.

It should not be confused with and does not replace the letter indicating the differences between the claims as filed and as amended. It must be filed on a separate sheet and must be identified as such by a heading, preferably by using the words "Statement under Article 19(1)."

It may not contain any disparaging comments on the international search report or the relevance of citations contained in that report. Reference to citations, relevant to a given claim, contained in the international search report may be made only in connection with an amendment of that claim.

Consequence if a demand for international preliminary examination has already been filed

If, at the time of filing any amendments and any accompanying statement, under Article 19, a demand for international preliminary examination has already been submitted, the applicant must preferably, at the time of filing the amendments (and any statement) with the International Bureau, also file with the International Preliminary Examining Authority a copy of such amendments (and of any statement) and, where required, a translation of such amendments for the procedure before that Authority (see Rules 55.5(a) and 62.2, first sentence). For further information, see the Notes to the demand form (PCT/ISA/401).

If a demand for international preliminary examination is made, the written opinion of the International Searching Authority will, except in certain cases where the International Preliminary Examining Authority did not act as International Searching Authority and where it has notified the International Bureau under Rule 56.1b(ii), be considered to be a written opinion of the International Preliminary Examining Authority. If a demand is made, the applicant may submit to the International Preliminary Examining Authority a reply to the written opinion together, where appropriate, with amendments before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later (Rule 42bis, 1(c)).

Consequence with regard to translation of the international application for entry into the national phase

The applicant's attention is drawn to the fact that, upon entry into the national phase, a translation of the claims as amended under Article 19 may have to be furnished to the designated/elected Office, instead of, or in addition to, the translation of the claims as filed.

For further details on the requirements of each designated/elected Office, see the *PCT Applicant's Guide*, Volume II.